NAVAL WAR COLLEGE
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THE MARITIME ACTION GROUP AS A FUTURE CARRIER BATTLE GROUP SUBSTITUTE

By

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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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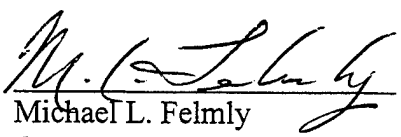

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The MAG is not intended to supplant the CVBG, but to act as a viable alternative with minimal risk. It is time to revisit the MAG as a 21st century force alternative for the Theater Commander in the absence of a CVBG.

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Abstract of

THE MARITIME ACTION GROUP (MAG) AS A FUTURE

CARRIER BATTLE GROUP (CVBG) SUBSTITUTE

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THE MARITIME ACTION GROUP AS A FUTURE CARRIER BATTLE GROUP SUBSTITUTE

INTRODUCTION

As the U. S. Navy enters the 21st century, the continued evolution of new technology and information systems will enhance the capabilities of an increasingly smaller naval force. This evolution, in concert with *Joint Vision 2010* and *Forward from the Sea...the Navy Operational Concept*, will be integrated into our doctrine and force structure to achieve battle space dominance. In 1992, Naval doctrine recognized that "the answer to every situation may not be a carrier battle group."[1] The 1994 Navy White Paper *Forward...From the Sea* identified the challenge to "refocus our more limited national assets on the highest priorities and most immediate challenges."[2] The Maritime Action Group (MAG) represents a task entity that, as a result of new emerging capabilities, can dramatically reshape forward naval presence. Properly employed in a joint environment, the MAG can provide the Joint Task Force (JTF) or Theater Commander the flexibility to meet the demands of forward presence, sea control, and power projection in lieu of a Carrier Battle Group (CVBG).

The analysis of what can make the MAG a suitable proxy for the CVBG will be presented as a capability comparison between the previous and proposed future MAG. The joint service air assets exist to provide air coverage that is lost without an organic Air Wing (CVW). The P-3C Orion possesses new weapons and sensor upgrades that enhance its offensive potential. The E-8 Joint Surveillance Target Attack Radar System (JSTARS) aircraft offers capability to assist the MAG with locating data on mobile threats and targets. The CG/DDG surface warships will be equipped with new, littoral weapons of greater lethality. These warships will be the premier active defense element of Theater Ballistic Missile Defense (TBMD). The SSN will be an integral element of the MAG, as it is with the

CVBG. It has the rapidly emerging capability of improved interoperability, and as will be proposed, is the ideal platform for offensive Mine Warfare (with an attendant doctrinal shift that recognizes organic mine-planting capability as a MAG core constituent). The MAG will be an optimal platform for future mine countermeasures systems. Network Centricity represents a synergistic force multiplier for the MAG by the networking of organic and supporting sensors and command and control information. Collectively, the above capabilities will transform the previous MAG into a feasible option for the power projection naval missions of tomorrow.

ORIGIN OF THE MAG

The concept of the MAG came about as a result of gaps in CVBG coverage in the Mediterranean in 1991[3]. The proposal consisted of two surface ships, one SSN, and P-3C maritime patrol (MARPAT) aircraft. Following its introduction in Sixth Fleet, a genuine effort was undertaken to develop doctrine for MAG employment. In 1993, the Sixth Fleet MAG manual promulgated doctrinal lessons learned to date. It stated that "the MAG is not a substitute for the CVBG; it is a stop gap measure for use when a CVBG is not available."[4] This is true – dependent on the mission (e.g. a CVBG is ideally tailored to joint land attack operations such as Operation Southern Watch). The CVBG and its organic air capability remained the maritime force of choice. The MAG concept was never considered a viable CVBG substitute and its utility was rarely addressed thereafter.

Fifth Fleet has embraced the CVBG as the force of choice by establishing a 1.0 carrier presence policy. Previously, there were "acceptable" gaps where a Middle East Task Force (Surface Action Group) patrolled in the Arabian Gulf in the absence of a CVBG. However; in 1999, the Forward Deployed Naval Force CVBG was hastily deployed to the

CENTCOM Area of Responsibility (AOR) to maintain the 1.0 carrier presence as the previously scheduled CENTCOM CVBG was diverted to conduct operations in the Adriatic Sea. The Theater Commander should have other acceptable options besides a CVBG to meet theater requirements. Early analysis of the MAG characterized it as a "force molecule – a fundamental unit of functional combat capability."[5] As such, it was touted as an adequate buffer between CVBG coverage, with sufficient organic defensive and offensive capability to at least engage an enemy until other forces could arrive.

The need for a potent force with maximum utility has not diminished. While the doctrinal base for MAG assessment has not developed since 1993, the capabilities it can provide and the battle space in which it will operate have changed significantly. At that time, Naval doctrine was beginning to shift its emphasis to the littoral and the services have since embraced an increasingly joint approach to war fighting. The utility of a MAG in an age of improved intelligence, networking of sensors, and weapons capability is compatible with tomorrow's battle space; able to deal with a burgeoning Theater Ballistic Missile (TBM) threat, proliferation of anti-ship cruise missiles, and increased use of precision land attack munitions.

AIR SUPPORT AND THE FUTURE MAG

The improved capability of the P-3C offers the MAG more firepower than in 1991. The Orion force has been reduced to 46% of its 1993 force structure and its forward deployed detachments consist of only two to three airframes to support requirements.[6] However, the current P-3C is a much greater force multiplier than 10 years ago. As a result, MARPAT support to the MAG may be intermittent; however, it is still a vital support element. The P-3C has demonstrated the capability to rapidly downlink radar and video

electro-optical (EO) images to ground commanders and can be adapted to reception at-sea; this capability extends the effective sensor range of the MAG. P-3C aircraft are now employing the AGM-84E Standoff Land Attack Missile (SLAM) providing additional standoff land attack capability for the MAG. In Kosovo, 17 of these weapons were employed with an 85% success rate.[7] The SLAM is one feature of the P-3C Anti-Surface Warfare Improvement Program Package (AIP) upgrade. The AIP aircraft also employ Maverick and Harpoon air-to-surface missiles, increased communications and data link connectivity, and improved EO/Infrared (IR)/Electronic intelligence collection capability. These enhancements can assist the MAG Commander in detecting and classifying threats. Additional upgrades will include the Joint Standoff Weapon (JSOW) for further standoff land attack, and Cooperative Engagement Capability (CEC) to enhance contact data connectivity.[8] When the P-3C is under tactical control of the MAG commander, the MAG will benefit from improved Intelligence, Surveillance, and Reconnaissance (ISR), increased land attack power projection, and more robust standoff anti-ship protection (especially important since SSN launched Harpoon has been phased out of service). The P-3C follow-on, the Multi-Mission Aircraft, will offer more capability as it will combine Orion patrol, reconnaissance, and special intelligence squadron functions into one.[9] Despite fewer airframes, limited time-on-station (around 6 hours), and shore basing, the improved capabilities of the Orion will play a vital supporting role for a MAG.

A second force multiplier that could integrate with the MAG is the Air Force JSTARS. This system complements the MAG strengths and addresses its littoral vulnerabilities. Heretofore, the Navy – JSTARS link has not been adequately exploited. Timely imagery and locating data of land based mobile targets from JSTARS can be made

available to plan and execute Precision Guided Munition (PGM) attacks. JSTARS locating data on mobile Transporter/Erector/Launchers (TEL) will assist the MAG in layering TBM coverage in conjunction with shore based Patriot batteries. Similarly, JSTARS locating data on mobile Anti-ship Cruise Missiles (ASCM) will enhance threat awareness capabilities of the MAG.[10] Best of all, it is effective against moving targets in poor visibility - providing littoral intelligence when other ISR sensors are ineffective. Simply put, "Joint STARS has the potential to exert an extraordinary influence on the conduct of joint operations at both the tactical and operational levels of war."[11]

If a MAG is to successfully substitute for the CVBG, joint defensive counter air fighter support must be provided. The use of Air Force air power from forward bases supporting independent naval warships is rudimentary. Integration of Air Force/Navy/Royal Air Force units in Operation Southern Watch is well established and successful. However, the JFACC tactical control (TACON) of naval aircraft is only in effect when the Navy aircraft are over land; Navy and JTF-Southwest Asia publish their own Air Tasking Orders. The CVBG Commander resumes TACON when returning aircraft are over water. This system is easily managed in peacetime when the operational factor space dominates. However, in wartime the land-water interface may not be an acceptable TACON boundary, as operational factor time and synchronization may preclude using a geographic boundary. Joint operability in current air operations has room for continued evolvement.

More applicable to the MAG is the case in which the joint air support is integrated with Naval forces without CVBG assets. This collaboration is also in seminal development. In the CENTCOM AOR, present joint air support doctrine is based on a combined Navy and Air Force Standard Operating Procedure promulgated in 1995. Implementation of the

procedure presupposes a naval crisis and is initiated by "voice-air-support-requests" (AirReqSup) from the effected naval unit(s) through multiple layers of the chain of command. At the Joint Force Air Component Commander (JFACC) Air Operations Center, the request is then evaluated and acted upon.[12] The process is very mechanical, and is slow responding to any but the most extreme emergencies. Successful joint air support for a MAG must further evolve so as to be routine, integrated into theater operations, and not precipitated by voice reports of a crisis already in progress.

The airspace coordination/deconfliction issues of Air Force and Navy could be minimized with a MAG since it has no organic fixed wing assets. A MAG requirement can easily be incorporated within the JFACC architecture. In a joint supported MAG, the JFACC will not likely be embarked afloat, since joint doctrine places the JFACC among the "preponderance of air assets and the capability to plan, task, and control joint air operations."[13] Additionally, the added JFACC responsibilities of coordinating joint air for the other component commanders represented by the JFC, providing theater surveillance and reconnaissance, and the extensive targeting responsibilities make it appropriate to place it ashore as the senior Air Force officer. It is therefore important that the JFACC recognize the MAG vulnerabilities, and routinely tailor the Air Tasking Order to support MAG operations, as operational risk to the MAG dictates. For example, the JFACC should schedule JSTARS missions supporting MAG objectives. With operational control of the P-3C in support of the MAG, the JFACC should use these limited assets to extend the MAG's defensive capability during fighter non-vulnerability periods. The JFACC should make it doctrine to schedule routine fighter sorties supporting the MAG and vary their optempo such that potential adversaries will recognize the rapid air support capability, without predictability. Most

importantly, the joint air and naval units must practice together and eliminate reliance on reactive procedures when the MAG comes under threat of attack. The responding Air Forces must also be able to chop TACON to the MAG commander to effectively respond to threats within the MAG's AOR.

The MAG commander must retain autonomy of his detachment of SH-60B helicopters. This coordination could be handled in a similar fashion to Army airspace management of its low flying attack helicopters by assigning the joint support a coordinating altitude, freeing the MAG Helicopter Element Coordinator from the JFACC. Navy and Air Forces must become and stay proficient in truly integrated joint air operations as a prerequisite for MAG application.

An issue which also must be resolved is the coordination of air defense within the MAG AOR. As the MAG may be separated from the joint air support by appreciable distance, the MAG cannot rely solely on its inherent mobility, stealth, and joint support for air defense. A degree of autonomy must be maintained to exercise its potent AAW capability. According to joint doctrine, the "responsibility of the JFACC, Airspace Control Authority (ACA), and Area Air Defense Coordinator (AADC) are interrelated and should normally be assigned to one individual."[14] This might seem inflexible, but elaborating joint doctrine recognizes that naval units allow other options besides airborne air defense alone. Accordingly, the JFACC (ACA) "may designate the naval commander as the control authority for a specific airspace control area or sector for the accomplishment of a specific mission."[15] Deconfliction of JFACC air assets with respect to a highly mobile MAG must be flexible and allow AEGIS warships maximum freedom to employ their air defense weapons.

SURFACE WARFARE IN THE FUTURE MAG

The Cruiser/Destroyer warships will be the backbone of the MAG. To assess how they will contribute to MAG capability as a CVBG substitute, the AEGIS equipped warship should be analyzed with regard to its enhanced capability and compatibility in likely littoral operating environments.

Proliferation and improvements in ASCM's will pose a serious risk to all warships. Survivability studies indicate that during a raid-style attack with ASCM's, the CVN will sustain almost certain serious damage and likely catastrophic damage from a simultaneous and coordinated enemy attack.[16] Against the CG/DDG, an ASCM hit will cause almost certain catastrophic damage, regardless of degree of coordination of the attack.[17] The prediction for the future is that the ASCM lethality will improve.[18] The difference, practically speaking, between serious and catastrophic damage to the CVN is diminished if a seriously damaged CVN cannot conduct air operations, thus becoming a huge liability. From an enemy perspective, where the U.S. Navy might view the CVN as a tactical or operational asset, our future littoral adversary may see it as a strategic asset, worthy of asymmetric response – particularly in light of the perception that the U.S. will not tolerate high personnel losses.[19] Moreover, the CVBG has never been put to the test in a dense ASCM environment, with a credible submarine threat, and a robust coastal defense setting.[20] If enemy detection and surveillance capability and weapons continue to improve, the high visibility of a CVBG as opposed to a stealthy, high mobility MAG may become too great a liability. Flight operations significantly hamper CVN mobility; it severely restricts its ability to maneuver and must operate at high speed on headings influenced by the prevailing winds until recovery is completed. These conditions may be unacceptable in the future littoral battle space where mines or rapid, synchronized enemy attack might preclude aircraft launch and/or recovery.

"Ultimately, it will be the cumulative effect of these threats (ballistic missiles, antiship cruise missiles, submarines) rather than the any one of them, that significantly erodes the carrier's utility."[21] The AEGIS equipped warship that is less overt, in a highly mobile unit such as a MAG, will be better suited to manage the littoral risks than a CVBG.

The weapons that will be utilized by tomorrow's surface warship will increase its offensive capability by the introduction of a variety of weapons that project power ashore. This improvement in capability is crucial to the MAG's credibility as a CVBG substitute. New munitions used in the littorals will enhance naval gunfire support and standoff power projection ashore to the degree that will be a legitimate alternative to manned, higher risk CVW air attacks. Land attack will soon involve more than TLAM and five-inch guns. The Extended Range Guided Munition, a GPS guided submunition dispensing missile, could enter the fleet as early as 2002. It will increase the AEGIS destructive power in a gunfire support mission.[22] The Navy is also pursuing two additional land attack missile options. One option is a modified version of the Army Tactical Missile System (ATACMS). The other is the Land Attack Standard Missile, a variant of the Navy Standard Missile.[23] Potential gains from large caliber gun technology might even enable the next generation of warships with the firepower of the retired Battleship. Improved surface warship weapons delivery capability against shore targets will be a key argument for the MAG as a viable alternative to the CVBG.

Perhaps the most significant role of the AEGIS configured ship in the decades ahead will be Theater Ballistic Missile Defense (TBMD). The measure of success in this area hinges on how well all four operational elements of TBMD are integrated – passive defense, active defense, attack operations, and command, control, communications, intelligence, and

intelligence (C4I).[24] The AEGIS will be a cornerstone of active defense. TBMD, just as the new weapons previously described, draw the warship closer to the shore. "The ability to destroy missiles in flight should be coupled with dynamic and responsive deployment of active defense systems to prevent the enemy from knowing what is being defended."[25] The stealth and mobility of the MAG support this requirement. This concept plays to the strength of the AEGIS as a MAG constituent, as its flexibility supports changing defensive coverage priorities covertly. This achieves the goal of lowering an adversary's expectation of attacking effectively.[26] AEGIS warships lose the capability to covertly and stealthily reposition within range to provide TBMD when operating with a CVBG.

The near term backbone of a credible active defense is the newest version of the multi-purpose Standard Missile (SM-2 Block IVA), which can be used against aircraft and sea skimming ASCM's.[27] Coupled with the AEGIS TBMD computer program, "Linebacker," the Navy Area TBMD system is expected to be fully operational in 2003.[28] It is a lower tier system which will intercept endoatmospheric, short range missiles like the SCUD. The operational factor space must be examined in terms of how the AEGIS will be employed in active defense. Current TBMD assets are limited to the Army Patriot PAC-3 system. This new version has a hit-to-kill warhead and increased range, but its engagement envelope is smaller than proposed Navy Area coverage.[29] Even when the Army fields the Theater High Altitude Air Defense (THAAD) system achieving exoatmospheric intercept, its "footprint" is only slightly larger than Navy Area.[30] With Navy Area, the effective intercept range of the SM-2 Block IVA (61-75 NM) constrains warship positioning.[31] This restriction on AEGIS ships would reduce the effectiveness of a CVBG; this TBMD setting represents a divergence in compatibility of the AEGIS in the traditional CVBG support role. The AEGIS

should be used where it can best counter the TBM threat – as a MAG constituent.

The Navy Area follow-on , Navy Theater Wide (NTW), will be an upper tier, exoatmospheric TBMD. This enhanced capability will rely on an improved Standard Missile interceptor (SM-3) which may enter service as early as 2007.[32] It will expand the defensive 'footprint' to the degree that organic MAG capability could provide TBMD for the entire theater - such as the Mediterranean or area surrounding the Sea of Japan.[33] With NTW, MAG ships could feasibly go anywhere in the theater without a CVBG and conduct TBMD. However, as the technology broadens and the footprint expands, so does the ability to intercept a TBM in the ascent phase; this was not possible with Navy Area. Missile engagement opportunities are improved by positioning the AEGIS closer to the launch point. Again, the trend is to draw the warship closer to the shore. Just as with Navy Area, the AEGIS will be most effective positioned closer to the TBM intercept location – deep in the littorals. The ascent phase intercept capability with NTW will draw in and restrict the AEGIS closer to the enemy instead of defended assets. From the mission and positioning requirements, the MAG is a better force structure for TBMD than the CVBG.

THE ROLE OF THE SSN IN THE MAG – EMPHASIZE MINE WARFARE

The capability of the SSN in the 21st century MAG must augment the strengths of surface warships. The submarine will still be the premier MAG asset for USW, but its strike warfare mission should be reduced and focused toward offensive mine warfare. An SSN will generally use much of its torpedo room stowage for Tomahawk Land Attack Missiles (TLAM). The TLAM has been used effectively many times in the last decade and the CINC carefully tracks the number of these weapons in theater. Newer 688 class SSN's already carry 12 vertical launch TLAM, but when compared to the CG or DDG loadout potential,

the number of TLAM per warship is minimal. Moreover, overt launch indicators of the TLAM threaten the security of the SSN. While it will be a huge paradigm shift for the SSN mission, the TLAM role should be provided by the surface ships, and the MAG SSN utilized for mine warfare. There are issues of how the SSN employs mines that must be improved, but an understanding of why the offensive mine warfare element is crucial to the MAG must be in perspective.

History provides some of the best examples of how effective mining can profoundly influence forward naval operations. The mining of Haiphong in 1943, Palau atoll in 1944, Operation Starvation of Japan in 1945, and North Vietnam in 1972 curtailed military and logistical traffic.[35] As the former CNO Admiral Mike Boorda stated in 1996, "Mine warfare more than any other single littoral warfare mission area, is the 'key' that will unlock the 'door' to the littoral battlespace."[36] The value of the offensive mine is in its use as a psychological weapon. Faced with uncertainty, an enemy is likely to exaggerate the threat of a perceived minefield. This leads to control of ship movements and increased effectiveness of the minefield.[37] Due to the MAG's small size, the potential of a minefield to constrain an enemy fleet before it can engage is of great value. Even if the mine threat does not keep the enemy inport, effectiveness will be measured in delays of operations and may force the opponent to spend considerable time and assets on countermeasures.[38] Moreover, they may prevent naval confrontation and prevent enemy attack; "By publicizing the existence of the minefield, the onus of accepting damage lies with the side attempting to breach the mines."[39] The inclusion of offensive mining capability should be incorporated in the MAG by definition due to its capability to hasten sea control .

What makes the submarine an ideal platform for offensive mining is its capability to

plant mines covertly in shallow water. Littoral sea control calls for bottom mines close to harbors, channels, etc. The deep water Captor mine is no longer in service and submarines utilize the shallow water standoff mine as their sole mining capability. The standoff range mitigates the submarine danger from deeper penetration into defended positions. It is covert, so the enemy will have little information about minefield existence, size, or exact location. The obsolete MK-67 Submarine Launched Mobile Mine (SLMM) is rapidly being phased out of service. The Improved SLMM, or ISLMM, its successor currently in development, will consist of a modified MK-48 heavyweight torpedo. This will provide greater standoff range and will carry two warheads, effectively doubling the SSN payload.[40]

The issue of payload is of great importance and represents a fundamental weakness in submarine offensive mining. Streamlining this process will enhance the flexibility of the SSN to respond to current conditions required by the MAG commander. Specifically, current Minefield Planning Folders (MFPF) are issued to a SSN prior to deployment and have identified potential minefields. The number of weapons required for a given minefield is often excessive. The ISLMM doubles the payload, but the MFPF must also reflect what the SSN can effectively plant . Mine Warfare Command (MWC) must have a more proactive role in creating minefields with the MAG commander in response to the current situation. For instance, if an observed enemy Q-route justifies planting mines in a location other than in the pre-planned MFPF, it should be responsively altered. Or if an emergent mission calls for planting mines at a particular chokepoint, the pre-planned minefields may not cover the geographic area. Minefield size must be commensurate with the SSN loadout. This may require the SSN to approach the objective area to achieve the desired probability of kill in a smaller field, but should be considered based on current intelligence. The SSN should be able

to coordinate with MWC/Theater Commander through the MAG commander to approve an optimum, timely mine plant. The offensive mine as part of the MAG capability will add depth in USW defense, in light of the proliferating diesel submarines; "the minefield will remain one of the most effective antisubmarine weapons ever developed; and... the submarine... will, as a mine planter, remain the most effective means of exploiting the value of the minefield"[41]

MINE COUNTERMEASURES AND THE MAG

Assuming the MAG operating environment may be laden with mines, will the MAG be able to counter the enemy mine threat? In essence, the MAG will face many of the same challenges as the CVBG and its SAG. A littoral emphasis exacerbates the mine threat because water depth supports planting bottom and tethered mines. As with the CVBG, it is prohibitive to deploy dedicated mine counter measure (MCM) vessels as an organic force unit. The MCM technologies of tomorrow will exceed current capability and will greatly enhance the MAG's mine defenses because they will be organically deployed. Although the SSN is not a platform for mapping or sweeping, it possesses a dramatically improved, covert, high frequency sonar that makes detection and avoidance plausible for moored or bottom mines. The most promising littoral MCM systems in the future are ideally employed with MAG elements because they will be submarine or helicopter based. They are also standoff systems. The SSN will field the Near Term Mine Reconnaissance System and a follow on long term system. These will utilize Unmanned Underwater Vehicle technology, but will provide classification only. The SH-60, organic to the CG and newer DDG will host the best MCM for the MAG. Future organic systems for the SH-60 include the Advanced Laser Mine Detection System to locate mines with a blue-green imaging laser. Its associated

neutralization system, the Rapid Airborne Mine Clearance System will use a super cavitating 20-mm round to destroy mines. The Shallow Water Influence Minehunting System will be a towed magnetic/acoustic sweeping system. In deeper water, the AQS-20X will couple advanced sonar and EO capability. Its complement is the Airborne Mine Neutralization system that will use a remotely guided weapon to attack deeper tethered mines. The newest DDG Flight IIA will have a remote Minehunting System integrated with its mainframe sonar suite, utilizing a remotely operated semi-submersible to locate mines.[42] Collectively, these future technologies will give the MAG robust MCM capabilities necessary to succeed in the littorals.

Mines are likely to be a component of any enemy strategy. They are relatively inexpensive, available to developing nations, and are difficult to detect during deployment as the U.S. learned during the Tanker Wars in the Arabian Gulf. The Iran Ajr mined the Strait of Hormuz area with WWI vintage contact mines that necessitated a huge effort to counter. The mine is the "logical tool of the underdog."[43] With at least two SH-60's and the SSN, the deployment of highly mobile, MAG based organic MCM is ideally suited for the littoral, and can provide the mine neutralization to allow for follow-on CVBG operations if required.

NETWORK CENTRICITY AND THE MAG

The success of the MAG will rely on more than stealth, mobility, and jointness; it requires the capability of increased connectivity. Network Centric Warfare (NCW) will play a prominent role for the MAG because of its potential to extend offensive reach and minimize vulnerability. This has generally been described as three dimensional volume dominance, in which the connected forces will rid its operating volume of enemies and ensure protection.[44] Network centric design ties together the essential functions that are key

to MAG success. NCW battle management emphasizes the common Tactical Picture; NCW warfare on detection/engagement; NCW war fighting on support/survivability/mobility.[45] Information technology will enhance MAG capability through these functions.

In the near-term, the Cooperative Engagement Capability (CEC) will be the system to put NCW functions into practice for the MAG. From the sensor perspective, linked track data extends a unit detection range and improves track quality via composite data. Improved composite fire control solutions, engagement of targets not held by the firing unit, and more alertment for employment of defensive measures will enhance weapons employment and help offset littoral risk from lack of around the clock CVBG alert aircraft.[46] CEC integration between SPY-1, ground based radars of Patriot and THAAD, and perhaps even infrared satellite infrastructure, such as the Army Tactical Information Broadcast System will improve TBMD capability. Mobile target locating data from Airborne Early Warning(AEW) aircraft and JSTARS can be assimilated as weapons systems inputs to shorten the time to put GPS munitions from the MAG on target.

CEC integration with the SSN will allow sharing of submerged contact data with other MAG units and improved flexibility for coordinated USW attack in Joint Action Areas. The SSN has always been challenged by its lack of communications and data rate connectivity. The submarine community is rapidly correcting these deficiencies with commercial off-the-shelf technologies. For example, buoyant antennas are in development that would allow two-way satellite communications below periscope depth[47] – a dramatic increase in capability to assist in remaining undetected.

Connectivity will improve the technological advances in capability of the MAG. Recently, an AEGIS CG served as a CJTF of Timor Sea Operations. This mission as a JTF in

an Operations Other Than War scenario required a high degree of connectivity, and it demonstrated the connectivity capability that a single CG/DDG warship now possesses in executing complex command and control functions.

CONCLUSION

The proposal that a MAG may substitute for a CVBG is a radical one, but the technological capabilities it will possess to perform future littoral missions with acceptable risk will make it a feasible CVBG substitute. The option for the Operational Commander to use a MAG concept is realistic, if the associated risk which is considered minimal, is properly managed. The loss of continuous coverage by CVBG alert aircraft and the possibility of overwhelming the MAG AAW defense must be considered. The risk is mitigated by responsive joint air support and inherent stealth and mobility over the CVBG. Unlike the CVBG, the MAG does not have dedicated support ships for logistics. Fast turnaround fueling piers at allied bases, use of allied oilers, or even providing the MAG a replenishment ship (this was done in the Mediterranean) are reasonable alternatives.[48] Finally, the greatest risk of the MAG, noted in its infancy, was a limited weapon engagement rate.[49] Again, the focus on stealth, mobility, and more effective and lethal weapons in the future will best mitigate this increased risk. Most forward presence roles support the proposal that the MAG will be a capable CVBG substitute.

The MAG was not by definition a replacement for the CVBG in the early 1990's; the context of the early 21st Century will be quite different. The new MAG will be strengthened by fully integrated joint air support with JSTARS and improved AIP P-3C – all interoperable. The AEGIS warship will have a mix of precision guided GPS weapons for Naval Gunfire Support. The future littoral battle space, reliant on seaborne TBMD for active

defense, favors the mobile MAG, as the CVBG becomes a greater liability. The MAG must utilize the SSN with the offensive mine warfare capability lacking in the CVBG. The MAG will be the keeper of SSN/helicopter organic MCM assets. Network Centric Warfare will be the "glue" that binds the time sensitive targeting information to the MAG's organic offensive capability, as well as expanding effective weapons range and alertment range from the enemy. As was recognized in 1993, the MAG is ideally suited as a test bed for future warship doctrine and tactics, and will readily integrate the engagement of our allies in exercises.[50] OPCON shifts will be easier to facilitate as well. The "21st Century Surface Navy will be composed of semi-independent, self-contained units," which "place a special premium on mobility and surprise rather than static fortifications, large formations, and set piece engagements."[51] The MAG, not the CVBG, will remain the force molecule[52], but it will also usher in the DD-21 style "Streetfighter Concept"[53] warfare of "networked series of systems that are surveillance and maneuver intensive, achieve positional advantage, are risk tolerant, and are built in accordance with new measures of effectiveness that embrace robustness in future force evaluations."[54]

ENDNOTES

[1] U.S. Navy, Chief of Naval Operations, ...From the Sea (Washington, D.C.: 1992), 6.
[2] U.S. Navy, Chief of Naval Operations, Forward...From the Sea (Washington, D.C.:1994), 2.
[3] Robert Crawshaw, "What is a Maritime Action Group," U.S. Naval Institute Proceedings, January 1993, 28.
[4] U.S. Sixth Fleet, Sixth Fleet Maritime Action Group (MAG) Manual, May 1993, Volume II, EX-1.
[5] Daniel Oliver, "A Force Molecule," U.S. Naval Institute Proceedings, June 1993, 72.
[6] Stephen Walsh, "Orion The Hunter, at Close Quarters," Sea Power, September 1998, 40.
[7] Aaron Smith, "Orions Get Piece of the Action Over Kosovo," Navy Times, July 12, 1999, 16.
[8] Walsh, 41-42.
[9] Robert McCord, "VP +VQ + VPU = VPR," U.S. Naval Institute Proceedings, March 1999, 105.
[10] Bingham, Price, "It's the Best Thing Since Gunpowder," U.S. Naval Institute Proceedings, January 1997, 47.
[11] Ibid., 45.
[12] COMUSNAVCENT/COMUSCENTAF, SOP 95-01 Joint Maritime Operations – Air. 2.
[13] U.S. Joint Chiefs of Staff, Joint Doctrine for Command and Control for Joint Air Operations (Joint Pub 3-56.1) (Washington, D.C.: November 1994), II-2.
[14] Ibid., II-4.
[15] U.S. Joint Chiefs of Staff, Joint Doctrine for Joint Airspace Control in the Combat zone (Joint Pub 3-52) (Washington, D.C.: July 1995), III-4.
[16] Roger Barnett, "Surface Ship Survivability Risk Management and Network Centric Warfare," Center for Naval Warfare Studies, U.S. Naval War College, (Newport RI, July 1998), Appendix D.
[17] Ibid, Appendix D.
[18] Ibid., 20.
[19] Ibid., 11.
[20] Ibid., 12.
[21] Andrew Krepenivich Jr., "Transforming the Navy's War-fighting Capabilities," Issues in Science and Technology (Fall 1996):29, quoted in Roger Barnett, "Surface Ship Survivability Risk Management and Network Centric Warfare," Center for Naval Warfare Studies, U.S. Naval War College, (Newport RI, July 1998), 3.
[22] Scott C. Truver, "Tomorrow's Fleet," U.S. Naval Institute Proceedings, January 1999, 88.
[23] Ibid.
[24] U.S. Joint Chiefs of Staff, Joint Doctrine for Theater Missile Defense (Joint Pub 3-01.5) (Washington, D.C.: February 1996), III-3.
[25] Ibid, III-9.
[26] Ibid.
[27] Ernest Blazar, "The Missile Killers," Sea Power, Sept 1999, 40.
[28] Ibid.
[29] John D. Gresham, "Navy Area Ballistic Missile Defense Coming On Fast," U.S. Naval Institute Proceedings, January 1999, 62.
[30] L.P.James III., "No Silver Bullet in Missile Defense," U.S. Naval Institute Proceedings, December 1999, 43.
[31] Gresham, 62.
[32] Blazar, 41.
[33] U.S.S.Lake Erie, Message DTG 152358Z APR 99, OPTASK TBMD Supplement.
[34] Center for Naval Analysis, Psychological Aspects of Mine Warfare (Alexandria, VA, October 1982), 4.
[35] Naval Doctrine Publication 3 Naval Operations NDP-3 (Draft). U.S. Navy. U.S. Naval Doctrine Command. <http://www.nwdc.navy.smil.mil/doctrine> (1996).
[36] Center for Naval Analysis, 1.
[37] Gregory K. Hartmann and Scott C. Truver, Weapons That Wait (U.S. Naval Institute, 1991), 236.
[38] Ibid., 233.
[39] U.S. Navy. Chief of Naval Operations (N87), "Submarine Force Year in Review, " Undersea Warfare, Spring 1999, 3.
[40] Captain Cowie, 1958 Conference on the Naval Minefield, quoted in Gregory K. Hartmann and Scott C. Truver, Weapons That Wait (U.S. Naval Institute. 1991), 182.

[41] Buzz Broughton and Jay Burdon, "The Revolution of Mine Countermeasures," U.S. Naval Institute Proceedings, May 1998, 57.
[42] Hartmann and Truver , 15.
[43] Joseph Cipriano, "A Fundamental Shift in the Business of Warfighting," Sea Power, March 1999, 41.
[44] Ibid.
[45] Robert Kerno, "Cooperative Engagement Capability and the Interoperability Challenge," Sea Power, March 1999, 47.
[46] Ibid.
[47] Jacob Longacre and others, "Voices From the Deep, " Undersea Warfare, Fall 1998, 14.
[48] Crawshaw, 31.
[49] Ibid, 29.
[50] Ibid, 30.
[51] Richard Wright, "Future Force – The Land Attack Destroyer and the 21st Century Navy," Surface Warfare, September -October 1998, 8.
[52] Oliver, 72.
[53] A.K. Cebrowski and Wayne P. Hughes, "Rebalancing the Fleet," U.S. Naval Institute Proceedings, November, 1999. 34.
[54] Ibid, 33.

BIBLIOGRAPHY

Cebrowski, A.K. and Wayne P. Hughes. "Rebalancing the Fleet." U.S. Naval Institute Proceedings, November 1999, 31-34.

Barnett, Roger. "Surface Ship Survivability Risk Management and Network Centric Warfare." Center for Naval Warfare Studies, U.S. Naval War College, Newport RI, July 1998.

Bingham, Price. "It's the Best Thing Since Gunpowder." U.S. Naval Institute Proceedings, January 1997, 45-49.

Blazar, Ernest. "The Missile Killers." Sea Power, Sept 1999, 39-41.

Broughton, Buzz and Jay Burdon. "The Revolution of Mine Countermeasures." U.S. Naval Institute Proceedings, May 1998, 55-58.

Center for Naval Analysis. Psychological Aspects of Mine Warfare. Alexandria, VA: October 1982.

Cipriano, Joseph. "A Fundamental Shift in the Business of Warfighting." Sea Power, March 1999, 39-42.

COMUSNAVCENT/COMUSCENTAF. SOP 95-01 Joint Maritime Operations – Air, 1995.

Crawshaw, Robert. "What is a Maritime Action Group." U.S. Naval Institute Proceedings, January 1993, 28-31.

Gresham, John D. "Navy Area Ballistic Missile Defense Coming On Fast." U.S. Naval Institute Proceedings, January 1999, 58-63.

Hartmann, Gregory K. and Scott C. Truver. Weapons That Wait. Annapolis: U.S. Naval Institute, 1991.

James, L.P.III. "No Silver Bullet in Missile Defense." U.S. Naval Institute Proceedings, December 1999, 39-43.

Kerno, Robert. "Cooperative Engagement Capability and the Interoperability Challenge." Sea Power, March 1999, 45-47.

Longacre, Jacob, Gerald Exley, and Craig McMillan. "Voices From the Deep. " Undersea Warfare, Fall 1998, 12-15.

McCord, Robert. "VP +VQ + VPU = VPR." U.S. Naval Institute Proceedings, March 1999, 105-107.

Moeller, R.T. "JSTARS Works for Navy, Too." U.S. Naval Institute Proceedings, January 1997, 44.

Naval Doctrine Publication 3 Naval Operations NDP-3 (Draft). U.S. Navy. U.S. Naval Doctrine Command. <http://www.nwdc.navy.smil.mil/doctrine> (1996).

Oliver, Daniel. "A Force Molecule." U.S. Naval Institute Proceedings, June 1993, 71-73.

Smith, Aaron. "Orions Get Piece of the Action Over Kosovo." Navy Times, July 12, 1999, 16.

Truver, Scott C. "Tomorrow's Fleet." U.S. Naval Institute Proceedings, January 1999, 83-88.

U.S. Joint Chiefs of Staff. Joint Doctrine for Command and Control for Joint Air Operations (Joint Pub 3-56.1) Washington, D.C.: November 1994.

U.S. Joint Chiefs of Staff. Joint Doctrine for Joint Airspace Control in the Combat Zone (Joint Pub 3-52) Washington, D.C.: July 1995.

U.S. Joint Chiefs of Staff. Joint Doctrine for Theater Missile Defense (Joint Pub 3-01.5) Washington, D.C.: February 1996.

U.S. Navy. Chief of Naval Operations (N87). "Submarine Force Year in Review. " Undersea Warfare, Spring 1999, 3.

U.S. Navy. Chief of Naval Operations. ,...From the Sea. Washington, D.C.: 1992.

U.S. Navy. Chief of Naval Operations. Forward...From the Sea. Washington, D.C.: 1994.

U.S. Sixth Fleet, Sixth Fleet Maritime Action Group (MAG) Manual. May 1993.

U.S.S Lake Erie. OPTASK TBMD Supplement Message DTG 152358Z, Apr 99.

Walsh, Stephen. "Orion The Hunter, at Close Quarters." Sea Power, September 1998, 38-42.

Wright, Richard. "Future Force – The Land Attack Destroyer and the 21st Century Navy." Surface Warfare, September – October 1998, 8-11.